



January 2016

# DEFENSE INFRASTRUCTURE

## Improvement Needed in Energy Reporting and Security Funding at Installations with Limited Connectivity

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#### Why GAO Did This Study

DOD is the largest energy consumer in the federal government, spending about \$4.1 billion on facilities' energy at more than 500 permanent military installations throughout the world in fiscal year 2013. To help ensure oversight of DOD's fulfillment of energy performance goals, Congress requires that DOD track energy savings, investments, and projects in its annual Energy Report. The Energy Report also details DOD's activities to enhance energy security.

Congress included a provision for GAO to review DOD's fiscal year 2013 Energy Report and energy security at energy-remote military installations—that is, those installations located in areas with limited connectivity and without significant infrastructure of power plants, transmission lines, or distribution lines.

GAO assessed the extent to which (1) DOD addressed the 12 required reporting elements and reliably reported data in its fiscal year 2013 Energy Report and (2) the military services help ensure energy security at energy-remote military installations in the United States. GAO analyzed DOD's Energy Report and interviewed officials from the Office of the Secretary of Defense, military services, defense agencies, and all installations in Alaska and Hawaii because they were identified as energy remote.

#### What GAO Recommends

GAO recommends, among other things, that DOD revise its guidance for producing the Energy Report and clarify funding processes to include consideration of energy security. DOD concurred with all recommendations.

View [GAO-16-164](#). For more information, contact Brian J. Lepore at (202) 512-4523 or [leporeb@gao.gov](mailto:leporeb@gao.gov) or Frank Rusco at (202) 512-3841 or [ruscof@gao.gov](mailto:ruscof@gao.gov).

#### What GAO Found

The Department of Defense's (DOD) fiscal year 2013 Annual Energy Management Report (Energy Report) addressed some of the required reporting elements and correctly incorporated data from the military services and defense agencies. However, the report is not fully reliable because the data were captured and reported using different methods, hindering comparability across the department. Specifically, the Energy Report addressed six, partially addressed four, and did not address two reporting requirements. For example, the Energy Report addressed the requirement to describe actions taken to implement DOD's energy performance master plan, partially addressed the requirement to describe progress to meet various energy goals (it described progress for three of five required goals), and did not address the requirement to describe the types and amount of financial incentives received. The Energy Report correctly reflected data provided by the military services and defense agencies. However, the military services and defense agencies used different methods for capturing and reporting on data in the Energy Report such as on energy consumption and projects. These inconsistencies resulted from guidance that was either unclear or lacking. For example, DOD did not provide guidance on reporting end-of-fiscal-year energy data; thus, the military services and defense agencies used different reporting methods. Without clear guidance for reporting data consistently, it will be difficult for DOD to have reliable data to plan effectively to reach energy goals, and Congress will have limited oversight of DOD's energy consumption and difficulty in comparing energy projects.

The military services generally help ensure energy security (the ability to continue missions in the event of a power outage) at their energy-remote military installations in Alaska and Hawaii by providing access to multiple power sources. However, GAO identified areas of risk to energy security regarding installation electricity systems, high energy costs, and funding. GAO found that the military services addressed some risks by conducting studies on integrating renewable energy into electricity systems and identifying alternative energy solutions to lower costs. However, military service efforts to incorporate energy security into funding decisions have been limited. The processes to evaluate projects for funding generally do not consider energy security in prioritizing those to receive funding, and officials from all four military services stated that there is no military service or DOD guidance related to evaluating projects for funding that focuses on energy security. As a result, six of the nine locations GAO visited in Alaska and Hawaii cited difficulty obtaining funding for energy security projects. For example, officials at the Air Force's Alaska Radar System said they have sought funding since 2002 to build a networked system of multiple fuel tanks at three off-grid locations that each have only one fuel tank, but they said energy security projects do not compete well against other projects, such as those for new facilities. Navy officials similarly stated that energy security projects—which have significant infrastructure costs—do not compete well for funding against energy conservation efforts based on return on investment. Without clarification of the processes used to compare and prioritize projects for funding to include consideration of energy security, it will be difficult for decision makers to have sufficient information to adequately prioritize energy security projects for funding when appropriate and thus address energy security issues.

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## Abbreviations

|               |                                    |
|---------------|------------------------------------|
| DOD           | Department of Defense              |
| Energy Report | Annual Energy Management Report    |
| OSD           | Office of the Secretary of Defense |

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January 27, 2016

Congressional Committees

The Department of Defense (DOD) is the largest energy consumer in the federal government, spending about \$4.1 billion on facilities' energy at more than 500 permanent military installations throughout the world in fiscal year 2013. These permanent installations are critical components of DOD's ability to fight and win wars, and they account for approximately 30 percent of DOD's total energy use. To help ensure oversight of the department's fulfillment of energy performance goals, Congress requires that DOD track energy savings, investments, and projects in its Annual Energy Management Report (Energy Report). The Energy Report also details DOD's activities to enhance energy security and resilience, with DOD reporting that it is critical for installation commanders to understand the vulnerabilities and risks associated with power disruptions that affect mission assurance. These power disruptions become even more critical at DOD installations that are located in areas without significant infrastructure of power plants, transmission lines, and distribution lines (i.e., energy-remote locations), which may have fewer options to obtain sufficient and reliable energy to ensure continuation of mission.

Since 2005, we have issued over a dozen reports on defense energy issues, including reports on specific requirements in DOD's Energy Report, renewable energy, and energy project financing options. In our September 2010 report, we found that the fiscal year 2009 Energy Report did not include information on the eight specific issues identified by the National Defense Authorization Act for fiscal year 2010.<sup>1</sup> In our January 2012 report, we found that DOD's fiscal year 2010 Energy Report fully addressed two, did not address one, and partially addressed five of the eight expanded reporting requirements.<sup>2</sup> The Related GAO Products page at the end of this report provides a listing of our related work.

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<sup>1</sup>GAO, *Defense Infrastructure: Department of Defense's Energy Supplemental Report*, GAO-10-988R (Washington, D.C.: Sept. 29, 2010).

<sup>2</sup>GAO, *Defense Infrastructure: DOD Did Not Fully Address the Supplemental Reporting Requirements in Its Energy Management Report*, GAO-12-336R (Washington, D.C.: Jan. 31, 2012).

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Section 2925 of Title 10 of the United States Code requires that, not later than 120 days after the end of each fiscal year, the Secretary of Defense shall submit to the congressional defense committees an installation energy report detailing the fulfillment during that fiscal year of select energy performance goals. Specifically, under the law, DOD's Energy Report must include 12 reporting elements, such as a table detailing funding for all energy projects funded through appropriations, a table listing third-party financing mechanisms, a description of actions taken and energy savings realized from DOD's energy performance master plan, and details of utility outages at military installations. In the Joint Explanatory Statement accompanying the Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015, Congress included a provision that we review DOD's fiscal year 2013 Energy Report and energy security at energy-remote military installations in the United States.<sup>3</sup> This report addresses the extent to which (1) DOD addressed the 12 required reporting elements and reliably reported data in its Energy Report and (2) the military services helped ensure energy security at energy-remote military installations in the United States.

To determine the extent to which DOD addressed the 12 required reporting elements and reliably reported data in its Energy Report, two GAO analysts independently reviewed the fiscal year 2013 Energy Report, comparing it with each element required by the law and determining whether each required reporting element was included. In the case of any conflicting determinations, a third GAO analyst adjudicated the difference. To gain a full understanding of the elements included in the Energy Report and to discuss the methodology used for collecting information and reporting on the required elements, we met with DOD officials knowledgeable about compiling information for the report, including individuals from the Office of the Secretary of Defense (OSD)—specifically, the Assistant Secretary of Defense for Energy, Installations, and Environment; the four military services; and the 10 defense agencies

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<sup>3</sup>The Joint Explanatory Statement also included a provision that we review how DOD has determined the costs and benefits of a sample of five renewable energy projects per military service. We are reviewing this provision separately and plan to report on the results in 2016.

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that contributed to the report.<sup>4</sup> We also reviewed the data and other inputs provided by each military service and defense agency to be included in the Energy Report. We looked for any anomalies in the data, such as missing data fields or numerical outliers. To examine whether the data and other inputs were correctly reflected, we then compared the data and other inputs from each military service and defense agency to the published Energy Report, using as criteria GAO's *Standards for Internal Control in the Federal Government* and DOD's *Annual Energy Management Report Fiscal Year 2013 Reporting Guidance*.<sup>5</sup> To standardize responses among the military services and defense agencies, we sent a structured questionnaire to knowledgeable officials from the four military services and 10 defense agencies regarding data collected for the Energy Report, including information about how facilities within each military service and defense agency reported energy consumption, energy projects, and September 2013 end-of-fiscal-year energy consumption data included in the Energy Report.

To determine the extent that the military services helped ensure energy security at energy-remote military installations in the United States, we first determined the scope of energy-remote military installations by evaluating electrical interconnectedness and robustness. First, to review interconnectedness, we conducted research on the U.S. electric power system and determined that Alaska and Hawaii have limited interconnectedness.<sup>6</sup> Second, once we identified these states, we sought to further narrow the scope by determining which areas in Alaska and Hawaii are less "electrically robust" (i.e., those areas where there is a smaller number of power plants and transmission lines surrounding the

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<sup>4</sup>The fiscal year 2013 Energy Report included the facility energy activities of the four military services—Army, Navy, Air Force, and Marine Corps—and the following defense agencies: Defense Contract Management Agency, Defense Commissary Agency, Defense Finance and Accounting Service, Defense Intelligence Agency, Defense Logistics Agency, Missile Defense Agency, National Geospatial-Intelligence Agency, National Reconnaissance Office, National Security Agency, and Washington Headquarters Services.

<sup>5</sup>GAO, *Standards for Internal Control in the Federal Government*, GAO/AIMD-00-21.3.1 (Washington D.C.: November 1999); DOD, *Annual Energy Management Report Fiscal Year 2013 Reporting Guidance* (July 2013).

<sup>6</sup>We determined that Alaska and Hawaii have limited interconnectedness because they are not connected to the three power grids in the 48 contiguous states, which are interconnected to each other. Moreover, the electrical systems in Alaska and Hawaii are not connected to each other.

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installation or no connectivity to transmission lines—for example, an installation that uses diesel generators for primary power) and therefore more energy-remote. Ultimately, all 26 installations in Alaska and 35 installations in Hawaii were included in our scope. We then visited or contacted facility energy managers at 9 locations that were responsible for overseeing all 61 installations.<sup>7</sup> For each location, we interviewed facility energy managers to identify the procedures, equipment, and plans in place to ensure energy security on site. We compared their actions to relevant DOD and military service regulations and guidance on their roles and responsibilities regarding energy security, including DOD's Energy Report, DOD installation energy guidance, and military service energy security guidance. We also interviewed military service officials to discuss their efforts and potential progress in helping to ensure energy security at energy-remote military installations. More details about our scope and methodology are included in appendix I.

We conducted this performance audit from March 2015 to January 2016 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## Background

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### DOD Roles and Responsibilities for Energy Management on DOD Installations

Within DOD, the military services and defense agencies are responsible for installation management, with oversight by the office of the Assistant Secretary of Defense for Energy, Installations, and Environment, who reports to the Under Secretary of Defense for Acquisition, Technology and Logistics. The office of the Assistant Secretary of Defense for Energy, Installations, and Environment is responsible for—among other things—issuing facility energy policy and guidance to DOD components and coordinating all congressional reports related to facility energy, including the Energy Reports. In addition, each military service is

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<sup>7</sup>We visited or contacted the facility energy manager(s) at each location and discussed with them the associated installations they oversaw.

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responsible for developing policies and managing programs related to energy and utility management, and has assigned a command or headquarters to execute these responsibilities.<sup>8</sup> The defense agencies also develop policies and manage energy programs, and each has a designated senior energy official to administer their respective programs. At the installation level, the public works, general facilities, or civil engineering departments oversee and manage the day-to-day energy operations.

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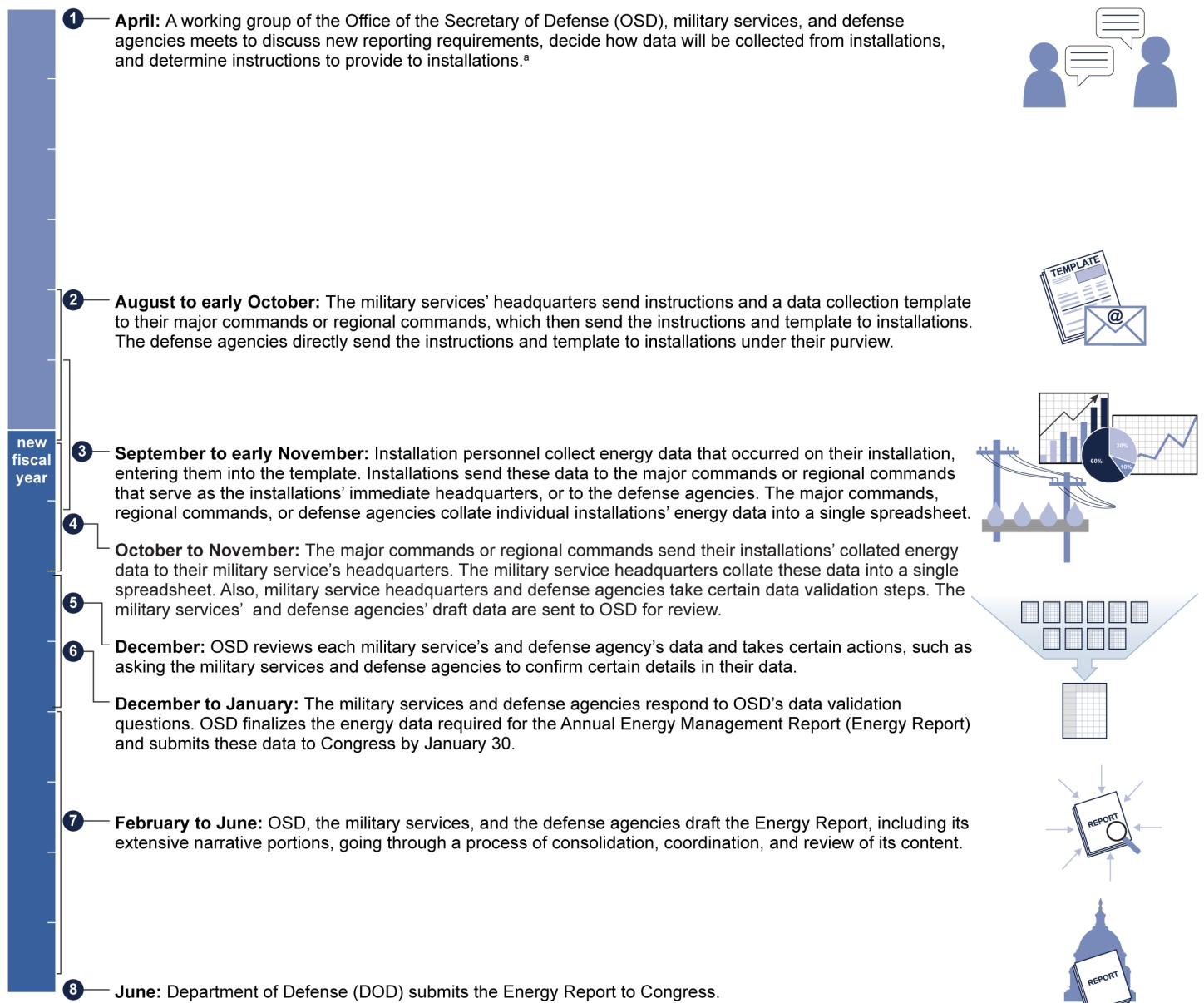
#### Annual Energy Management Report Process

DOD undergoes an annual process to report on energy data in its Energy Reports, collecting data required by section 2925 of Title 10 of the United States Code for the reports over a 5-month time period. The overall process, with participation by installations, military service headquarters, defense agencies, and OSD, is detailed in figure 1.

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<sup>8</sup>Within the Army, the responsible organization is the Installation Management Command, under the Assistant Secretary of the Army, Installations and Environment; within the Navy, the Naval Facilities Engineering Command, under the Commander, Navy Installations Command; within the Marine Corps, Marine Corps Installation Command; and within the Air Force, the Air Force Civil Engineer.

**Figure 1: Department of Defense's Typical Process for Collecting the Data Reported in Its Annual Energy Management Report**



Source: GAO analysis of DOD information. | GAO-16-164

<sup>a</sup>Section 2925 of Title 10 of the United States Code requires the Secretary of Defense to submit an installation energy management report. OSD also receives information and reports on energy at facilities—real property entities consisting of one or more of the following: a building, a structure, a utility system, pavement, and underlying land. For the purposes of this figure, we focus on installations—a facility or group of facilities in a specific geographic area and within reasonable proximity that supports a general functional purpose, collective activity, or mission.

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## Military Installations' Energy Security Efforts

Across the military services, energy security is considered critical for mission assurance. Energy security is defined by 10 U.S.C. § 2924 as having assured access to reliable supplies of energy and the ability to protect and deliver sufficient energy to meet mission essential requirements. There are multiple ways, although not all are mutually exclusive, to help ensure energy security at installations, including:

- **Diversification of energy sources.** To help ensure energy security, installations may seek to obtain energy from multiple sources to prevent reliance on a single source. This may include natural gas, petroleum, coal, and incorporation of renewable sources of energy—e.g., wind, solar, and biodiesel.
- **Use of renewable energy.** Installations may work to incorporate renewable energy sources as a way to lessen dependence on the grid, lower energy costs, and increase utility resilience in the event of an outage.<sup>9</sup> For example, renewable energy may be used to power a microgrid, in which the installation can disconnect from the utility grid during an outage and run solely on the renewable energy stored.<sup>10</sup>
- **Energy redundancy.** Installations may seek assured access to reliable energy through back-up energy sources that may be used in the event of an outage, such as on-site generators and power plants.
- **Energy conservation.** Installations may use energy conservation initiatives as a way to reduce energy consumption, lower energy costs, and ensure that sufficient funds are in place to meet future energy requirements.

DOD installations may use one or more of these approaches to help ensure energy security. Each installation's efforts to help ensure energy security may vary depending on its location, staff resources and funding available, and the nature of energy vulnerabilities identified.

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<sup>9</sup>According to the Department of Energy, the grid provides power to homes, businesses, and other buildings through central power sources. This interconnectedness means that when part of the grid needs to be repaired, everyone is affected.

<sup>10</sup>According to the Department of Energy, a microgrid is a local energy grid with control capability, which means it can disconnect from the grid and operate autonomously. A microgrid generally operates while connected to the grid, but it can break off and operate on its own using local energy generation in times of crisis like storms or power outages or for other reasons.

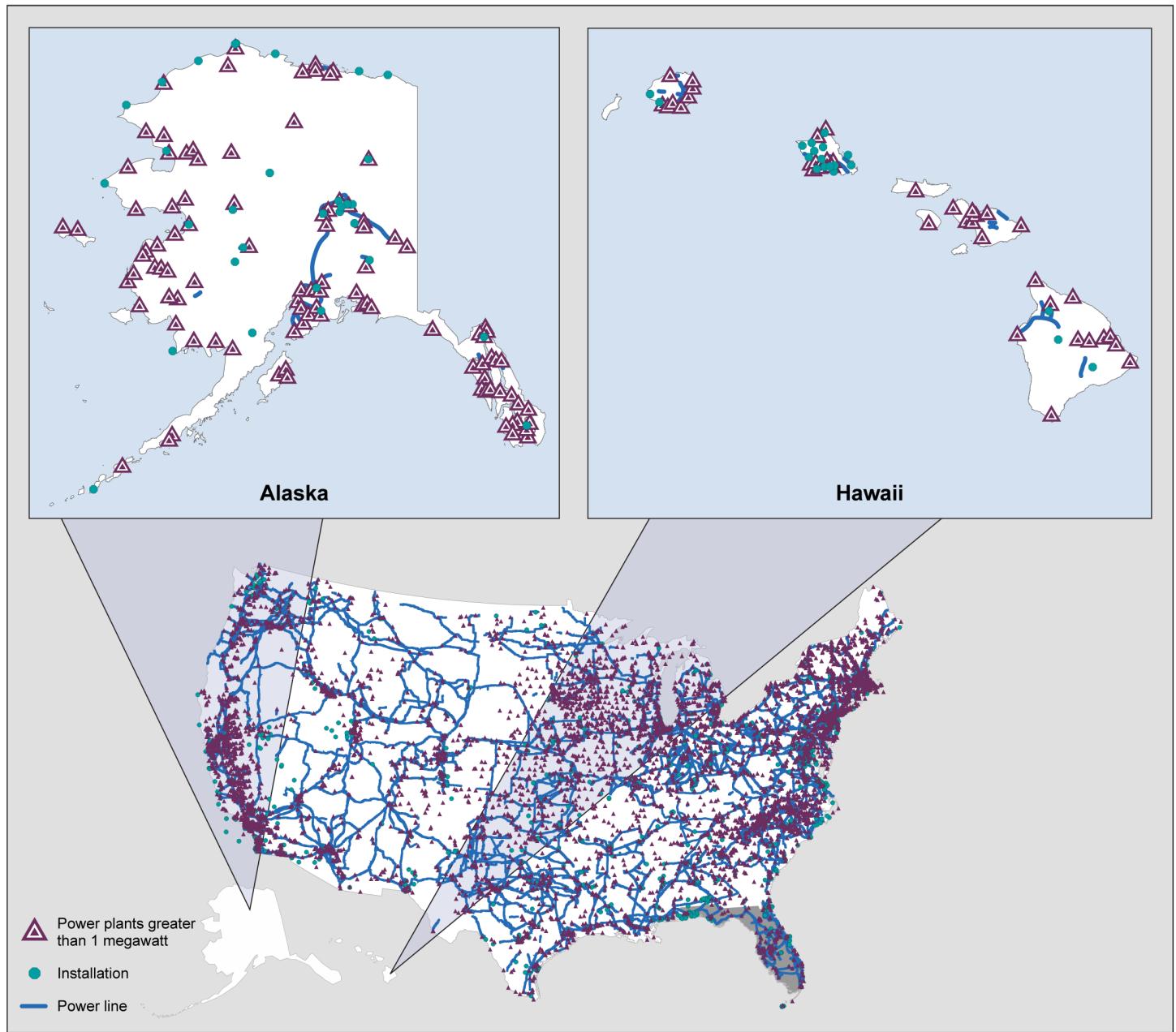
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## Electrical Grids and Energy-Remote Installations in the United States

According to the U.S. Energy Information Administration, there is not a single national power grid in the United States. Instead, there are three synchronized power grids that cover the 48 contiguous states that are loosely interconnected with each other: (1) the Eastern Interconnection (serving states generally east of the Rocky Mountains), (2) the Western Interconnection (spanning the area from the Pacific Ocean to the Rocky Mountain states), and (3) a system that serves nearly all of Texas.

The electricity systems in Alaska and Hawaii operate independently of the three continental grids and of each other (see fig. 2). In particular, there are several distinct electrical systems within Alaska and Hawaii that cover only portions of the states, such as the interconnections serving Anchorage, Fairbanks, and the Kenai Peninsula in Alaska and the individual islands in Hawaii.

**Figure 2: Map of Transmission Lines, Power Plants, and Installations in the Continental United States, Alaska, and Hawaii**



Source: GAO analysis of Department of Defense (DOD), SNL Financial, and U.S. Census Bureau data. | GAO-16-164

Energy-remote installations in Alaska and Hawaii face some unique differences from the installations located in the 48 contiguous states. For

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example, the cost of energy at energy-remote installations is high in comparison to the cost of energy at installations in the 48 contiguous states. According to the U.S. Energy Information Administration, Hawaii had the highest cost of electricity in the United States in 2013 and 2014, with the average price for commercial customers more than triple the U.S. average. Moreover, in 2013, Hawaii imported 91 percent of the energy it consumed—mostly as oil-based fuels—making it vulnerable to price fluctuations in the energy market and disruptions to the transportation of fuels. In 2013 and 2014, Alaska had the second-highest cost of electricity in the United States, with the average price for commercial customers 64 to 68 percent higher, respectively, than the U.S. average. In addition, the U.S. Energy Information Administration stated that in many areas of Alaska, commercially-supplied electricity is not available and consumers must generate their own electricity, sometimes using diesel generators, which have a high cost of operations. Given Alaska's extreme weather environments, its energy demand per person is the third highest in the nation.

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## DOD Met Some Reporting Requirements and Correctly Reflected the Military Services' and Defense Agencies' Data and Other Inputs in Its Fiscal Year 2013 Energy Report, but the Data Are Unreliable

### DOD's Fiscal Year 2013 Energy Report Met Some but Not All Reporting Requirements

Of the 12 reporting requirements for DOD's Energy Report, our analysis showed that the department fully addressed 6, partially addressed 4, and did not address 2. The requirements fully addressed included describing actions taken to implement the energy performance master plan and energy savings realized from such actions, among other requirements.

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The requirements partially addressed included describing progress made to achieve three of five energy goals; a table detailing funding, by account, for all energy projects funded through appropriations; a table listing all energy projects financed through third party financing mechanisms; and details of utility outages at military installations. The requirements not addressed were information on renewable energy certificates associated with energy projects financed through third-party financing mechanisms and a description of the types and amount of financial incentives received.<sup>11</sup> According to OSD officials, these requirements were not fully addressed for a number of reasons, such as inclusion of the information in another report and concerns about public release. However, DOD did not identify that the information could be found elsewhere or that it had public release concerns to clarify why it did not include required elements. Table 1 below summarizes our assessment of the extent to which DOD's report included each of the required reporting elements. Appendix II includes our detailed evaluation of each of the required reporting elements, including the reasons OSD officials provided for any requirements that were not fully addressed.

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<sup>11</sup>In the United States, renewable energy production essentially creates two products: the energy itself and an associated commodity, called a renewable energy certificate, which represents a certain amount of energy generated using a renewable resource. Renewable energy certificates are bought and sold in a fashion similar to stocks and bonds.

**Table 1: GAO Assessment of the Extent to Which the Annual Energy Management Report Addressed the Required Reporting Elements**

| Required reporting elements   | Our assessment  |
|---|---|
| 1. A description of progress to meet various energy goals.  | Partially addressed (described three of five required goals)  |
| 2. A table detailing funding, by account, for energy projects funded through appropriations.  | Partially addressed (included a table but did not detail the funding by account)  |
| 3. A table listing energy projects financed through third-party financing mechanisms, the duration of each mechanism, an estimate of the financial obligation incurred, whether the project incorporates energy security, and the estimated payback period. | Partially addressed (included a table but did not include duration of funding mechanisms, estimate of the financial obligation, details on energy security, and the estimated payback period)   |
| 4. A list of any renewable energy certificates associated with third-party-financed projects including additional descriptive information about those certificates.   | Not addressed (did not provide a list or description, although our analysis found some renewable energy projects that had associated certificates)  |
| 5. A description of actions taken to implement the energy performance master plan.  | Fully addressed   |
| 6. A description of the energy savings realized from such actions.  | Fully addressed   |
| 7. An estimate of the types and quantities of energy consumed by DOD and its employees, and certain additional information about that energy consumption.   | Fully addressed   |
| 8. A description of the types and amount of financial incentives received under section 2913 of Title 10 of the United States Code, and additional information about those incentives.  | Not addressed (did not provide a description)   |
| 9. A description and estimate of the progress made to meet certification requirements for sustainable green-building standards.   | Fully addressed   |
| 10. A description of best practices for measuring energy consumption.   | Fully addressed   |
| 11. Details of utility outages at military installations.   | Partially addressed (generally identified information on utility outages at installations. However, as we reported in July 2015, DOD's collection and reporting of utility disruption data was not comprehensive and contains inaccuracies <sup>a</sup> ) |
| 12. A description of any other issues the Secretary of Defense determined relevant.   | Fully addressed   |

Source: GAO analysis of DOD's Annual Energy Management Report. | GAO-16-164

Notes: The National Defense Authorization Act for Fiscal Year 2016, Pub. L. No. 114-92 (2015), changed several of the required reporting elements. In particular, the fourth requirement on renewable energy certificates and the seventh requirement on estimating the types and quantities of energy consumed were removed. The ninth requirement on sustainable green-building standards was revised to require a description of progress in meeting certain standards under the Unified Facilities Criteria. The eleventh requirement on utility outages was revised to require details of non-commercial utility outages and DOD-owned infrastructure. Additionally, a new requirement was added for the inclusion of a classified annex, as appropriate.

<sup>a</sup>GAO, *Defense Infrastructure: Improvements in DOD Reporting and Cybersecurity Implementation Needed to Enhance Utility Resilience Planning*, GAO-15-749 (Washington, D.C.: July 23, 2015).

We found that the required reporting elements were not all met because OSD's process for producing the Energy Report did not ensure this occurred. Specifically, in 2011, OSD developed its current process for

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collecting energy data and producing the Energy Report, including a standard format that it populates each year with updated narrative and energy data. This process, however, did not account for certain steps. For example, the process step of deciding what data to collect from the installations did not identify all data to be captured to fulfill the requirements. OSD's guidance and template for collecting energy data did not include instructions to collect these data. As a result, OSD did not have comprehensive data to report on requirements such as financial incentives and renewable energy certificates received from utility energy service contracts and energy savings performance contracts.<sup>12</sup> Additionally, OSD's process step for consolidating specific requirements into the written report had not been reexamined in several years, resulting in some requirements remaining unaddressed. Specifically, the decisions OSD made in 2011 for consolidating requirements into the Energy Report have not been updated or examined. For example, our review of the fiscal year 2014 Energy Report, issued in May 2015, found that many of the required reporting elements that were not fully addressed in the fiscal year 2013 Energy Report were also not fully addressed in the fiscal year 2014 Energy Report.

*Standards for Internal Control in the Federal Government* call for agencies to update internal control activities when necessary to provide reasonable assurance for effectiveness of operations and compliance with applicable laws and regulations.<sup>13</sup> Without further updates or examination of OSD's process for producing the Energy Report, DOD is at risk of future annual reports also falling short of providing congressional decision makers with a complete and accurate understanding of the extent to which DOD has fulfilled select energy performance goals.

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<sup>12</sup>Utilities energy service contracts are contracts in which a utility arranges funding to cover the capital costs of the project, which are repaid over the contract term from costs savings generated by the energy efficiency measures. Energy savings performance contracts are partnerships between a federal agency and an energy service company, in which the energy service company guarantees that improvements to save energy will generate energy cost savings sufficient to pay for the project over the term of the contract.

<sup>13</sup>GAO/AIMD-00-21.3.1.

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## DOD's Fiscal Year 2013 Energy Report Correctly Reflected Input but Data Are Unreliable and Hinder Comparability

### DOD Correctly Reflected the Military Services' and Defense Agencies' Input in Its Energy Report

In our review of DOD's Energy Report, we found that the underlying data correctly reflected input from the military services and defense agencies. However, DOD's report was not fully reliable because the data and other inputs the military services and defense agencies provided were captured using different methods and thus hindered comparability.

In our review of DOD's fiscal year 2013 Energy Report, we found that the vast majority of the data and other input submitted by the military services and defense agencies were correctly reflected in the published Energy Report.<sup>14</sup> Any inaccuracies we found were insignificant. Specifically, in comparing the data submitted by the military services and defense agencies to the published Energy Report, we found 2 inaccuracies out of nearly 2,000 data inputs provided. For example, DOD received information about energy consumption and cost by square footage from 705 installations and facilities. However, DOD did not include in the published report information on four facilities from the National Reconnaissance Office and one facility from the Air Force—an exclusion of less than 1 percent of the total number of installations that could have been reported. DOD responded that it chose not to include installation data for sensitivity reasons. Additionally, we found DOD incorrectly published in the Energy Report 1 out of 1,288 appropriated projects as contributing to energy efficiency goals rather than renewable energy goals.

However, in July 2015, we reported on material inaccuracies in duration and cost data on utility disruptions reported in DOD's fiscal year 2012 and 2013 Energy Reports.<sup>15</sup> Regarding the duration of disruptions, we reported that three of the four military services reported some disruptions that were less than the DOD criteria of commercial utility service disruptions lasting 8 hours or longer.<sup>16</sup> According to a DOD official, these disruptions constituted about 12 percent of the 266 disruptions DOD

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<sup>14</sup>We excluded a review of utilities disruptions at military installations from this report because we previously reported on this topic in July 2015.

<sup>15</sup>GAO, *Defense Infrastructure: Improvements in DOD Reporting and Cybersecurity Implementation Needed to Enhance Utility Resilience Planning*, GAO-15-749 (Washington, D.C.: July 23, 2015).

<sup>16</sup>The military services were required to report disruptions that lasted 8 hours or longer.

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reported in the fiscal year 2012 and 2013 Energy Reports. Regarding the cost of disruptions, we reported that \$4.63 million of the \$7 million in utility disruption costs reported by DOD in its fiscal year 2012 Energy Report were indirect costs, such as lost productivity, although DOD had directed that such costs not be reported. We recommended, among other things, that DOD improve the effectiveness of data validation steps in its process for collecting and reporting utilities disruption data in order to improve the comprehensiveness and accuracy of certain data reported in the Energy Reports. DOD concurred with our recommendation but did not provide information on the timeline or specific actions it plans to take to implement the recommendation. To date, no action has been taken to address this recommendation but DOD stated it expects to implement the recommendation by April 2016.

OSD, each of the four military services, and several defense agencies mentioned difficulties with conducting a quality data review. Specifically, officials said the timeframes were too short and resources too limited to conduct a thorough review. For example, Marine Corps officials said they scan data submitted by the installations for obvious errors, but OSD's review process is more rigorous. Similarly, the Navy told us it relies heavily on OSD's data reliability efforts. An OSD official and certain military services' officials also explained that—in their limited time to validate all of the data included in the Energy Reports—they prioritize validation of certain data types, such as utilities disruption data.

To conduct their review, OSD officials said that they compared the fiscal years 2012 and 2013 Energy Report data to see if there were any major differences. The officials also compared data for consistency among similar data entries, such as renewable energy consumption, that were sent by each military service and defense agency in two different workbook submissions. From this review, the officials identified specific areas of concern and sent a three-to-four page questionnaire to each of the military services and defense agencies. The officials estimated they received about a 90 percent response rate and were able to make many edits to the data. They added that their review time was too limited to correct everything that might have been inaccurate, but from their perspective any inaccuracies would most likely be statistically insignificant. In July 2015, we found that, based on our review of the fiscal year 2014 utilities resilience data submitted by the military services to OSD—and OSD's data validation efforts—the accuracy of some of DOD's

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## DOD Reported Data in Its Energy Report That Was Captured and Reported Using Different Methods, Rendering It Unreliable

data may be improving.<sup>17</sup> This improvement, along with actions to implement our recommendation to further improve the effectiveness of data validation steps, may provide the Congress better oversight of the efforts being undertaken by DOD.

We found that the military services and defense agencies captured and reported data using different methods in three areas of the Energy Report: energy consumption of tenants and hosts, energy projects, and end-of-fiscal-year data. This situation—which ultimately affects all data presented in the Energy Report—occurred because guidance was either unclear or lacking. In previous work examining, among other things, DOD’s efforts to effectively implement existing guidance, we found that clear and complete guidance is important for its effective implementation.<sup>18</sup> Without collecting and reporting data using consistent methods, decision makers in DOD will be hindered in their ability to plan effectively for steps to reach energy goals, and Congress will have limited oversight of the department’s energy consumption and difficulty in comparing energy projects among those reporting.

- **Energy consumption of tenants and hosts.** At several installations, DOD components may serve as either tenants, in which they rent space from another federal agency or a private organization, or hosts, in which they lease space to other agencies or organizations. The Energy Report guidance states that a host will report energy consumption, unless there is a mutual agreement between the host and the DOD tenant to report otherwise. However, we found that limited instructions in the guidance led to different reporting methodologies among and within the military services and defense agencies regarding tenant and host energy reporting. The guidance did not state that the military services or defense agencies should identify if they were tenants or hosts at each installation, how much energy they were reporting for tenants, or if they were splitting reporting among different energy types, such as having the host report all electrical consumption but the tenant report water and petroleum consumption. For example, for facilities in which the Defense Intelligence Agency served as tenants, the facilities either

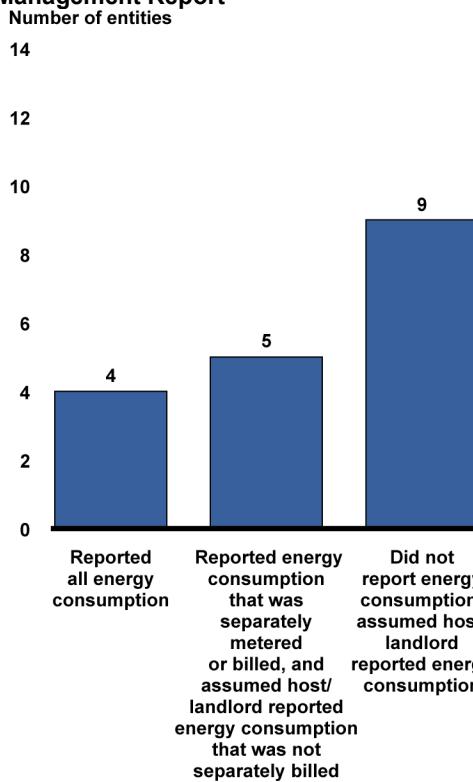
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<sup>17</sup>GAO-15-749.

<sup>18</sup>GAO, *Climate Change Adaptation: DOD Can Improve Infrastructure Planning and Processes to Better Account for Potential Impacts*, GAO-14-446 (Washington, D.C.: May 30, 2014).

reported all energy consumption or did not report any energy consumption, assuming instead that the host would report. In contrast, all tenant facilities from the Defense Commissary Agency reported energy consumption that was separately metered or billed and assumed that the host reported energy consumption that was not separately billed. As a result, it is difficult to get a clear understanding of all the data presented in the Energy Report and challenging to compare it among the installations that reported. Figures 3 and 4 identify some of the different reporting methods used by the four military services and 10 defense agencies for tenant and host energy reporting.

**Figure 3: Reporting Methods for Tenants by the Military Services and Defense Agencies in the Department of Defense's Fiscal Year 2013 Annual Energy Management Report**

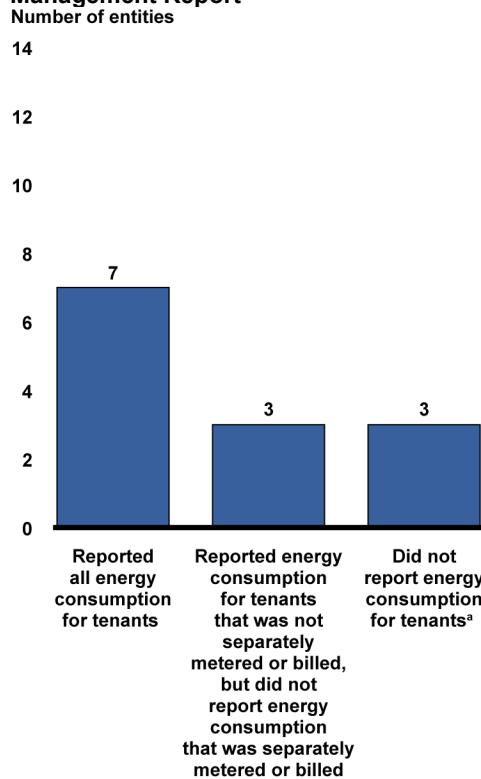


Source: GAO analysis of Department of Defense (DOD) data. | GAO-16-164

Notes: The different methods for reporting by tenants do not equal 14 because some military services and defense agencies identified that they did not serve as tenants at any installations, and others identified multiple ways they reported the data.

While the tenants assumed that the host/landlord reported energy consumption for the latter two reporting methods, the extent to which the host/landlord did or did not is unknown.

**Figure 4: Reporting Methods for Hosts by the Military Services and Defense Agencies in the Department of Defense's Fiscal Year 2013 Annual Energy Management Report**



Source: GAO analysis of Department of Defense (DOD) data. | GAO-16-164

Notes: The different methods for reporting by hosts do not equal 14 because some military services and defense agencies identified that they did not serve as hosts at any installations, and others identified multiple ways they reported the data.

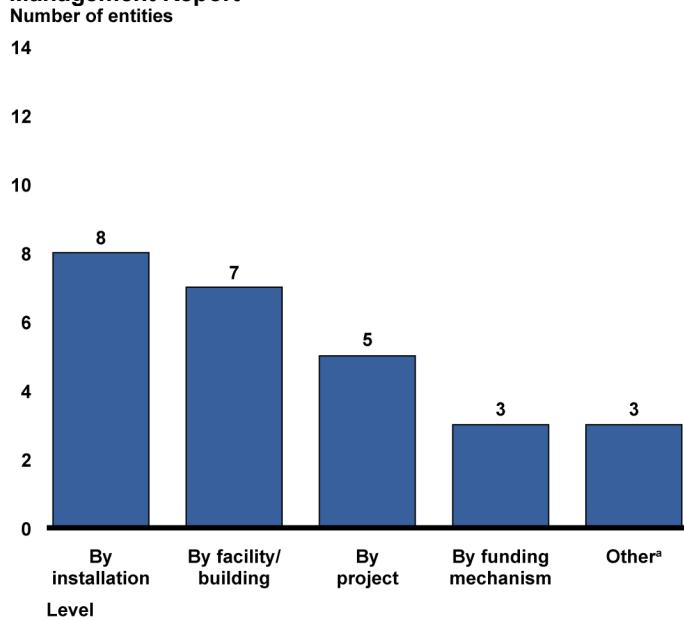
<sup>a</sup>When the hosts did not report energy consumption for tenants, they assumed that the tenant independently reported its energy consumption. However, the extent to which tenants did or did not is unknown.

- **Energy projects.** The Energy Report lists energy conservation, renewable energy, and water conservation projects. However, throughout the report we found that the four military services and 10 defense agencies reported these projects inconsistently (see fig. 5) because the guidance for the Energy Report does not identify at what levels they should be reported. Entities reported energy projects by installation, facility/building, project type, funding mechanism, or other means. For example, the Navy stated that it might consolidate 10 smaller solar energy projects into 1 larger solar project for reporting purposes, whereas the Marine Corps stated that it does not track by

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project type but rather by installation, building, and energy type. These different methods of reporting energy projects make it difficult to clearly understand the size and scope of the projects as well as compare the projects among those reported.

**Figure 5: Reporting Methods on Energy Projects by the Military Services and Defense Agencies in the Department of Defense's Fiscal Year 2013 Annual Energy Management Report**



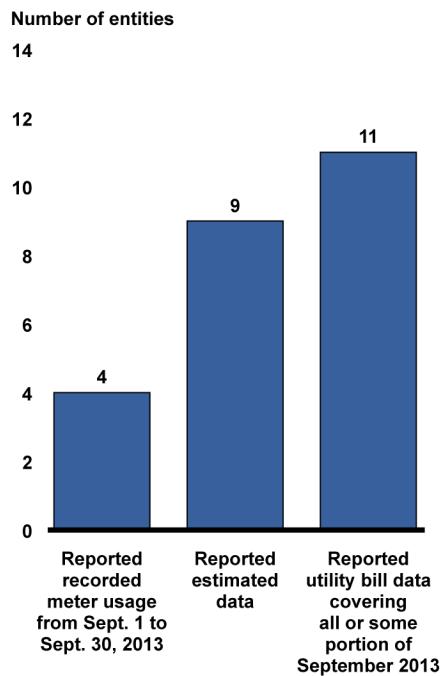
Notes: The different methods for reporting energy projects do not equal 14 because some military services and defense agencies identified multiple ways they reported the data.

<sup>a</sup>Other methods of reporting energy projects included consolidation at varying command levels and not reporting energy project data.

- **End-of-fiscal-year data.** We found that the military services and defense agencies used a variety of methods for reporting their end-of-fiscal-year energy data—and, in some cases, installations within each military service reported their end-of-fiscal-year energy data using different methods. For example, because OSD requires data inputs by mid-November, some military services required initial submissions from the installations by mid-October, which is before some energy utility bills have been received. As a result, some installations estimate end-of-fiscal-year usage, and the estimates may be based on different factors, including previous month data, historical data, or data from a month with similar weather patterns. Additionally, because utility bills may straddle months (such as from mid-September through

mid-October), some military services and installations chose to report according to the utility bills rather than the fiscal year. In contrast, some installations have meters installed and report actual usage for the fiscal year. Figure 6 identifies the different methods used by the four military services and 10 defense agencies to report end-of-fiscal-year data.

**Figure 6: Reporting Methods by the Military Services and Defense Agencies for End-of-Fiscal-Year Data Collection in the Department of Defense's Fiscal Year 2013 Annual Energy Management Report**



Source: GAO analysis of Department of Defense (DOD) data. | GAO-16-164

Note: The different methods for reporting end-of-fiscal-year data do not equal 14 because some military services and defense agencies identified multiple reporting methods.

In our review of actual energy consumption data from a nongeneralizable sample of installations, we found some examples of how different methods of collecting data led to different reporting results. For example, the Navy's Joint Base Anacostia Bolling in Washington, D.C. used estimates to determine its annual energy

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costs.<sup>19</sup> In contrast, the Defense Finance and Accounting Service, National Reconnaissance Office, and Defense Contract Management Agency each reported actual fiscal year usage, not estimates. However, the Energy Report did not annotate when estimates were used. Furthermore, installations used different approaches to estimate end-of-fiscal-year data. For example, Navy installations used previous year data to make their estimates while some Air Force installations estimated based on a specific month with similar weather patterns. As a result, the data presented throughout the Energy Report cannot be reliably compared among the military services and defense agencies.

The guidance for the energy report did not identify how the military services and defense agencies should report energy data when it cannot reflect actual amounts for the full fiscal year. Additionally, the guidance did not identify how corrections can be made, if at all. For example, Navy officials told us they reported estimated consumption for all installations in the initial submission to OSD, and that although updated data was available by the December data quality review process with OSD, they were not allowed to make corrections because the estimated data had already been reviewed. By not providing guidance on how to report energy data when an installation cannot reflect actual data for the full fiscal year for the Energy Report, it is difficult to accurately compare data among the military services and defense agencies.

OSD officials told us that they do not include additional instructions in the guidance for the Energy Report to the military services and defense agencies regarding energy consumption of tenants and hosts, energy projects, and end-of-fiscal-year data collection and reporting. In some cases, OSD officials stated that it would be difficult to provide guidance. For example, they stated that each installation may receive utility bills at different intervals, such as monthly or quarterly, making it challenging to provide specific guidance on how to accurately report energy consumption for the end of the fiscal year. However, currently there are no instructions that require installations to identify their end-of-fiscal-year reporting methods so that OSD, the military services, and the defense agencies can identify if different reporting intervals exist. As a result, DOD is not in a position to identify in the Energy Report where different data

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<sup>19</sup>The Navy's Joint Base Anacostia Bolling in Washington, D.C. reported an annual energy cost over \$1 million more than actually spent.

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reporting methods were used and what data may not be comparable among the military services and defense agencies.

*Standards for Internal Control in the Federal Government* states that information should be clearly communicated, so that users can determine whether the agency is achieving its compliance requirements.<sup>20</sup> Without clear guidance for collecting and reporting data consistently, and clearly identifying where data may not be comparable and the reasons why, it will be difficult for decision makers in DOD to have reliable data to plan effectively for steps to reach energy goals, and Congress will have limited oversight of the department's energy consumption and difficulty in comparing energy projects among those reporting.

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## Military Services Are Helping to Ensure Energy Security at U.S. Energy-Remote Installations, but Areas of Risk Remain

### Military Services Are Helping to Ensure Energy Security

The military services are helping to ensure energy security at all installations in Alaska and Hawaii by installing multiple power sources, which can be utilized in the event of an outage, at their remote facilities. Installations that were identified as mission critical by officials had additional energy security measures in place, such as on-site power plants and uninterruptible power supplies (i.e., backup that instantly starts once the grid loses power). For example, of the 20 sites that comprise the Air Force's Alaska Radar System, officials stated that 10 of the sites are located "off-grid" and are equipped with stand-alone power plants including redundant generation capacity.<sup>21</sup> According to officials, these sites are equipped with at least one generator that can supply sufficient

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<sup>20</sup> GAO/AIMD-00-21.3.1.

<sup>21</sup> The Alaska Radar System is comprised of 20 radar sites that are used to provide some monitoring of defense activities in that region.

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power generation and multiple generators to provide redundant back-up power. The officials stated that the 10 sites receiving their power from local grids are also equipped with redundant backup generators to ensure reliable power in the event of an outage. All of the Alaska Radar System locations also feature uninterruptible power supplies to ensure mission critical loads remain working. Additionally, given its mission importance, officials told us the Navy's Pacific Missile Range Facility in Hawaii has a backup diesel generator plant that can start automatically in case of a grid failure. Furthermore, officials stated that the Army recently reached an agreement with Hawaiian Electric Company to build a 50 megawatt power plant in the interior of Oahu on Army land. According to Army officials, this new power plant could potentially provide power if a weather emergency shuts down the island's coastal power plants. Moreover, Air Force officials in Hawaii told us that Kaena Point, a satellite tracking station, has an Air Force-owned diesel power plant onsite that provides back-up generation. This power plant is designed to start automatically when the grid goes down, and it can provide power to the base for about 40 days without refueling. In addition, officials at Joint Base Elmendorf-Richardson, Alaska, stated Fort Richardson has significant redundancy through its onsite landfill gas electrical generation plant which, in combination with back-up generators, can provide complete energy independence from the municipal electrical grid for 2 weeks in the event of an emergency (see fig. 7).

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**Figure 7: 1.4 Megawatt Generators at Landfill Gas Plant at Joint Base Elmendorf-Richardson, Alaska**



Source: GAO. | GAO-16-164

We also found that the energy officials at all nine locations we visited or contacted stated they are generally prepared to respond to energy disruptions that might occur, although we found that the level of documentation for energy security planning at energy-remote locations varies across installations.<sup>22</sup> An OSD Energy Policy Memorandum requires that defense managers and commanders (1) conduct energy vulnerability analyses and review for currency annually, (2) establish energy emergency preparedness and operations plans, and (3) develop and execute remedial action plans to remove unacceptable energy security risks.<sup>23</sup> We found differences among installations in regard to

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<sup>22</sup>We visited or contacted energy officials at 9 locations, who were responsible for overseeing the 26 installations in Alaska and 35 installations in Hawaii.

<sup>23</sup>Office of the Assistant Secretary of Defense, *Defense Energy Program Policy Memorandum (DEPPM) 92-1* (Jan. 14, 1992).

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documentation of their plans. For example, Marine Corps Base Hawaii has a full energy emergency preparedness and operations plan and remedial actions plans. Officials at U.S. Army Garrison Hawaii, by contrast, stated that the Garrison does not have any documented energy emergency preparedness and operations plans. Army officials stated the response to an energy emergency would depend on the situation, and they have the expertise to respond if needed. Officials at Eielson Air Force Base, Alaska, stated that the installation does not have a formal energy emergency preparedness and operations plan, but they receive quarterly vulnerability analyses from the inspector general's office and have a contingency response plan in the case of a power outage. However, in cases where an installation did not have formal or specific energy security documentation, we found that the requirements of the OSD Energy Policy Memorandum were incorporated into installation-wide plans, such as continuity of operations plans.

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### Some Areas of Energy Security Risk Remain, and the Military Services Are Taking Some Actions to Mitigate Them

During our site visits in Alaska and Hawaii, we identified three areas of risk to energy security regarding funding, installation electricity systems, and cost. Specifically, we found that military services' funding processes may limit energy security projects' ability to compete for funding, the introduction of renewable energy may affect installation electricity systems, and the high cost of energy may be difficult for installations to sustain over the long term.

First, we found that military services' funding processes may limit the ability of the installations to obtain funding for energy security projects. DOD Directive 4180.01, *DOD Energy Policy*, states that it is DOD policy to, among other things, improve energy security and that the Deputy Undersecretary of Defense for Installations and Environment should ensure cost-effective investments are made in facility infrastructure to, among other things, enhance the power resiliency of installations.<sup>24</sup> In addition, DOD Instruction 4170.11, *Installation Energy Management*, states that DOD components shall take necessary steps to ensure the security of energy and water resources.<sup>25</sup>

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<sup>24</sup>DOD Directive 4180.01, *DOD Energy Policy* (Apr. 16, 2014).

<sup>25</sup>DOD Instruction 4170.11, *Installation Energy Management* (Dec. 11, 2009).

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However, across the military services, officials told us that energy security projects do not compete well for funding because there is no clarity regarding the role that energy security plays in military service processes when evaluating a project for funding. In May 2014, we reported that the military services use “scoring” processes to consider projects for funding. During these “scoring” processes, DOD officials assign numerical values—or “points”—to certain project characteristics; potential projects’ relative scores are used to rank the projects; and senior decision makers at the military services’ headquarters review the rank-order list, selecting projects based on service priorities.<sup>26</sup> However, energy security is generally not included in this list of project characteristics. In addition, since energy security projects are not identified in the decision-making processes, there is no way of knowing how many of the projects do not obtain funding.

Officials at six of the nine locations we visited or contacted cited difficulty obtaining funding for energy security or would like to see dedicated funding for energy security projects. For example, officials overseeing the Air Force’s Alaska Radar System stated that they have sought military construction funding since 2002 to build a networked system of multiple fuel tanks, referred to as a tank farm, at three off-grid locations that each has only one large fuel tank. According to officials, if any of the current tanks were to fail, then the sites would lose all of their fuel for the year (see fig. 8). Officials stated that the projects would replace the large fuel tank with a multi-tank system. However, the officials said they are having difficulties obtaining funding because energy security projects do not compete well against other military construction projects, such as those for new facilities or mission-critical activities. According to officials, the tanks are now close to the point of failure. Also, an official at Marine Corps Base Hawaii stated that difficulty getting funding for aging equipment is the biggest vulnerability to the energy system. According to the official, plans to replace the aging equipment keep getting postponed in order to provide for other funding priorities. This official also noted that if older energy equipment is broken, it can be difficult to find replacements. In addition, Army officials at Fort Wainwright in Alaska stated that it is difficult to obtain military construction funding for current mission needs, including energy security projects, versus new mission needs. Navy officials at Joint Base Pearl Harbor Hickam also stated that

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<sup>26</sup> GAO-14-446.

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the energy security projects they submit for funding do not compete well. For example, they said that energy security projects—which have significant infrastructure costs—do not compete well for funding against energy conservation efforts based on return on investment.

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**Figure 8: Single Large Fuel Tank at Alaska Radar System Site**



Source: Air Force. | GAO-16-164

Additionally, all four military services' energy headquarters offices told us that there is no specific military service or OSD guidance or clarity on energy security funding. As a result, military service officials told us that they had difficulty incorporating energy security into funding decisions. For example, Air Force officials stated that the Air Force Civil Engineer Command wanted to allow for a tradeoff between cost effectiveness and energy security when considering a new renewable energy project that could incorporate energy security features, such as a microgrid. However, the officials said they do not yet have the right criteria to define that tradeoff and to conduct that level of decision making. Moreover, a Marine Corps Headquarters official stated that, although the Marine Corps has a process in place to identify energy security vulnerabilities and mitigating

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actions, it can be difficult to get funding for energy security projects because there is no DOD requirement for energy security. In other words, there is no specific DOD requirement that identifies the level of energy security an installation should have. The official further stated that energy security projects, such as a microgrid or power plant, cannot compete well against energy efficiency or renewable energy projects that have a return on investment. Army officials similarly noted that energy security projects do not compete as well as other projects for funding based on return on investment, and it would be helpful to have criteria (project characteristics) for energy security project funding consideration. The Navy has made limited efforts to incorporate energy security into funding decisions, but officials told us that the efforts are rudimentary. For example, the Navy's energy-Return on Investment tool, which it uses to assess energy projects, considers energy security in its calculations. However, a Navy Headquarters official told us that energy security is considered a "soft benefit," or benefit that is not the central focus of the project, and that it is difficult to fund a large project based only on soft benefits.

Officials at installations told us that, without clarification of how energy security is considered in military service funding decisions, they have to try different approaches in their attempts to fund energy security projects. For example, Navy officials in Hawaii stated that they tried for 10 years to get funding for grid consolidation at the Pacific Missile Range Facility, but were not able to until it was shown that grid consolidation will allow the base to potentially build and then hook up to a landfill gas renewable energy plant. In Alaska, Air Force officials stated that difficulties obtaining military construction funding have led Air Force officials to work with attorneys at the Pacific Air Force Command to assess the viability of alternative sources of funding to build tank farms at the three off-grid Alaska Radar System locations that have only one large fuel tank each. However, as we have previously reported, alternatives to military construction funding have limitations, may vary in availability, and can be complex and time-consuming.<sup>27</sup> As a result, this approach may not result in a funded project, or it may ultimately take longer than the traditional military construction process to fund a project. Without clarification of the processes the military services use to compare and prioritize projects for

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<sup>27</sup>GAO, *Renewable Energy Project Financing: Improved Guidance and Information Sharing Needed for DOD Project-Level Officials*, GAO-12-401 (Washington, D.C.: Apr. 4, 2012).

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funding to include consideration of energy security, it will be difficult for decision makers to have sufficient information to adequately prioritize energy security projects for funding when appropriate and thus address energy security issues.

Second, we found that the introduction of renewable energy sources may affect the stability of remote or small installation electricity systems, but the military services are taking some steps to address this risk. DOD Directive 4180.01 calls for the diversification and expansion of DOD energy supplies and sources, including renewable energy sources.<sup>28</sup> Military service officials we spoke with generally stated that it is difficult to integrate intermittent sources of renewable energy (e.g., solar and wind power) into existing infrastructure. For example, in Hawaii, Navy and Army officials stated that because the amounts of intermittent renewable energy can vary significantly, it can cause fluctuations in power quality such as voltage and frequency on small or isolated electricity systems, which can damage equipment connected to them. These officials noted that the amount of electricity generated from solar and wind systems can vary significantly with ambient conditions such as cloud cover and wind speed. In Alaska, Air Force officials explained that many of the radar sites are in locations rated with high potential for wind turbines. However, the officials said the wind is too turbulent at these locations, such that the wind has knocked down a wind turbine prototype that was developed. Furthermore, even if wind energy generation was an option, the officials explained that because the microgrids at these sites are so small, adding wind turbines for electrical generation could cause disruptions in the electrical frequency of the grid.

Despite the potential challenges with integrating renewable energy sources at energy-remote installations, officials told us that efforts are underway, including studies on the incorporation of intermittent energy sources, to continue to increase the use of renewable energy resources at these locations and mitigate the integration risks. For example, officials at Marine Corps Base Hawaii told us that they reached out to the Naval Facilities Engineering Command to conduct studies within the next year to enable the installation to incorporate its expanding production of renewable energy. The installation is currently in the process of executing a power purchase agreement for two megawatts of solar photovoltaic

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<sup>28</sup>DOD Directive 4180.01, *DOD Energy Policy* (Apr. 16, 2014).

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arrays on rooftops and car ports. Almost all of the installation housing is owned by a private developer and has solar photovoltaic panels on the rooftops. Marine Corps Base Hawaii is working on an agreement with the developer to purchase excess solar photovoltaic power generated from the housing. In addition, Marine Corps Base Hawaii is conducting a grid-modeling study—expected to be completed in a year—to see the effect of integrating solar energy into the energy system.

Third, we found that the high cost of energy at remote locations may be difficult for installations to sustain over the long term and thus could affect overall mission assurance across the department, but DOD has conducted studies or taken actions to reduce costs. DOD Directive 4180.01 states that it is the department's policy to, among other things, mitigate costs in its use and management of energy.<sup>29</sup> Army officials at Fort Greely in Alaska told us that their biggest challenge is the high cost of energy and expressed concern that it may become increasingly difficult for the Army to sustain the high costs in the long term. Paying these high-cost energy bills could potentially force the military services to make tradeoffs in a constrained budgetary environment. Fort Greely officials stated that the Army hired a contractor to conduct a study to identify alternative energy solutions to lower costs and still provide energy security. Officials at Fort Wainwright also mentioned the high cost of utilities, noting that they pay \$79 per ton for coal—more than double the U.S. average price for coal.<sup>30</sup> They stated that it was the primary reason for hiring the same contractor as Fort Greely to identify alternative energy options for their installation as well. Both studies were completed in August 2015 and identified numerous potential energy conservation measures and recommendations. As of September 2015, senior Army officials were reviewing the recommendations to determine which to implement. In Hawaii, Navy officials told us that high oil prices in 2008 greatly increased the energy costs at Joint Base Pearl Harbor Hickam, such that the base temporarily had to shut down some facilities because the energy costs were too high. Since then, officials stated the Navy has instituted renewable energy projects and energy conservation efforts to help lower energy costs. Also, Air Force officials stated that they are concerned with the high cost of energy, which ranges from \$75,000 to

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<sup>29</sup>DOD Directive 4180.01, *DOD Energy Policy* (Apr. 16, 2014).

<sup>30</sup>According to the U.S. Energy Information Administration, the U.S. average price for coal per ton in 2013 was \$37.24.

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\$100,000 per month, at Kaena Point in Hawaii, and they are working to lower costs through energy conservation efforts to help ensure access to electricity in the future.

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## Conclusions

The ability of DOD to effectively manage energy at its installations is an important element of mission assurance, and comprehensive measurement of facility energy could help the department maintain an aggressive pace toward its larger energy objectives. Through its Energy Report, DOD is required to track certain energy conservation measures, investments, and performance against established goals, as well as identify certain activities to enhance energy security and resilience. However, DOD's process for preparing the Energy Report did not ensure it addressed all the statutory requirements. In addition, while DOD has taken steps to help ensure data quality in its Energy Report, the military services and defense agencies capture and report using different methods; thus, data are not comparable. Without reexamining the process for producing the Energy Report to help ensure it fully complies with statutory requirements, providing more consistent guidance to the installations, and identifying in the Energy Report instances in which data may not be comparable among the military services and defense agencies and the reasons why, it will be difficult for decision makers in DOD to plan effectively for steps to reach energy goals, and Congress will have limited oversight of the department's energy consumption and difficulty in comparing energy projects among those reporting.

Moreover, the ability of the military services to effectively secure energy at their energy-remote installations is essential to avoid serious and potentially crippling operational impacts. The military services have taken reasonable steps, such as conducting studies on the incorporation of intermittent renewable energy sources and identifying alternative energy solutions, to overcome grid stability issues and high energy costs. However, the military services remain at risk for potentially underfunding energy infrastructure investments because there is no clarity regarding the role that energy security plays when evaluating a project for funding. Without clarifying the processes used to compare and prioritize military construction projects for funding, to include consideration of energy security as appropriate, it will be difficult for decision makers to have sufficient information to adequately prioritize energy security projects and thus address energy security issues.

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## Recommendations for Executive Action

We recommend the Secretary of Defense take the following four actions:

To better provide Congress with information needed to conduct oversight and make decisions on programs and funding, we recommend that the Secretary of Defense direct the Assistant Secretary of Defense for Energy, Installations and Environment to reexamine the process for producing the Energy Report to help ensure it complies with statutory requirements, and update it as appropriate. This includes reexamining the process to include required energy goals, descriptions of energy projects funded by appropriations and third parties, details of utility outages at military installations, and a description of the types and amount of financial incentives received.

In order to improve the consistency of certain data submitted by the military services and defense agencies to the Office of the Secretary of Defense and reported in the Energy Report, we recommend that the Secretary of Defense direct the secretaries of the Army, Navy, and Air Force, the Commandant of the Marine Corps, the heads of the defense agencies, and the Assistant Secretary of Defense for Energy, Installations and Environment to work together to

- provide more consistent guidance to the installations, including clearly stating the energy reporting requirements for tenant and host facilities, energy projects, and end-of-fiscal-year data, and
- identify in the Energy Report instances in which data may not be comparable among the military services and defense agencies and the reasons why.

To better provide the military services with information needed to make decisions on the prioritization of funding, we recommend that the Secretary of Defense direct the secretaries of the Army, Navy, and Air Force and the Commandant of the Marine Corps to clarify the processes used to compare and prioritize military construction projects for funding, including how and when to include consideration of energy security.

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## Agency Comments and Our Evaluation

We provided a draft of this report for review and comment to DOD. In written comments, DOD concurred with all recommendations. DOD's comments are summarized below and reprinted in their entirety in appendix III. DOD also provided technical comments, which we incorporated as appropriate.

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DOD concurred with our first recommendation to reexamine the process for producing the Energy Report to help ensure it complies with statutory requirements. In its response, DOD said the Office of the Assistant Secretary of Defense for Energy, Installations, and Environment is already taking action to ensure the next annual energy report complies with the requirements of the recently amended section 2925 of Title 10 of the United States Code.<sup>31</sup>

DOD also concurred with our second and third recommendations—which, in its comments, DOD combined into one response—that DOD provide more consistent guidance to the installations for the Energy Report and identify in the Energy Report instances in which data may not be comparable among the military services and defense agencies. DOD stated that the Office of the Assistant Secretary of Defense for Energy, Installations, and Environment will work with the military services in fiscal year 2016 to provide more consistent guidance to military installations and will identify in the fiscal year 2016 Energy Report where data may not be compatible.

DOD further concurred with our final recommendation that the military services clarify the processes used to compare and prioritize military construction projects for funding, including how and when to include consideration of energy security. DOD noted that it is pursuing an update to DOD Instruction 4170.11, *Installation Energy Management*, and plans to include guidance to prioritize funding decisions consistent with this recommendation.

If enacted, we believe that DOD’s proposed actions will aid decision makers in DOD to plan effectively for steps to reach energy goals and address energy security issues, as well as provide Congress with better oversight of the department’s energy consumption.

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<sup>31</sup>The National Defense Authorization Act for Fiscal Year 2016, Pub. L. No. 114-92 (2015), changed several of the reporting elements for the Energy Report required in section 2925 of Title 10 of the United States Code. Among others, the fourth requirement on renewable energy certificates was removed. As such, we removed from our recommendation that DOD reexamine the process to include information on renewable energy certificates associated with energy projects financed through third-party mechanisms, which we had originally included in the recommendations sent to DOD in our draft report. The remainder of our recommendation is unchanged.

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We are sending copies of this report to the appropriate congressional committees; the Secretary of Defense; the Secretaries of the Army, Navy, and the Air Force; the Assistant Secretary of Defense for Energy, Installations, and Environment; and the Commandant of the Marine Corps. In addition, the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact Brian Lepore at (202) 512-4523 or [leporeb@gao.gov](mailto:leporeb@gao.gov) or Frank Rusco at (202) 512-3841 or [ruscof@gao.gov](mailto:ruscof@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix IV.



Brian J. Lepore  
Director, Defense Capabilities and Management



Frank Rusco  
Director, Natural Resources and Environment

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*List of Committees*

The Honorable John McCain  
Chairman  
The Honorable Jack Reed  
Ranking Member  
Committee on Armed Services  
United States Senate

The Honorable Thad Cochran  
Chairman  
The Honorable Richard J. Durbin  
Ranking Member  
Subcommittee on Defense  
Committee on Appropriations  
United States Senate

The Honorable Mark Kirk  
Chairman  
The Honorable Jon Tester  
Ranking Member  
Subcommittee on Military Construction, Veterans' Affairs, and Related Agencies  
Committee on Appropriations  
United States Senate

The Honorable Mac Thornberry  
Chairman  
The Honorable Adam Smith  
Ranking Member  
Committee on Armed Services  
House of Representatives

The Honorable Rodney Frelinghuysen  
Chairman  
The Honorable Pete Visclosky  
Ranking Member  
Subcommittee on Defense  
Committee on Appropriations  
House of Representatives

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The Honorable Charles Dent  
Chairman  
The Honorable Sanford Bishop, Jr.  
Ranking Member  
Subcommittee on Military Construction, Veterans' Affairs, and Related  
Agencies  
Committee on Appropriations  
House of Representatives

# Appendix I: Objectives, Scope, and Methodology

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The objectives of our review were to examine the extent to which (1) the Department of Defense (DOD) addressed the 12 required reporting elements and reliably reported data in its fiscal year 2013 Annual Energy Management Report (Energy Report) and (2) the military services helped ensure energy security at energy-remote military installations in the United States.

To determine the extent to which DOD addressed the 12 required reporting elements in its Energy Report, two GAO analysts independently reviewed the fiscal year 2013 Energy Report, comparing it with each element required by the law and determining whether each required reporting element was included. In the case of any conflicting determinations, a third GAO analyst adjudicated the difference. To gain a full understanding of the elements included in the Energy Report and to discuss the methodology used for collecting information and reporting on the required elements, we met with DOD officials knowledgeable about compiling information for the report, including individuals from the Office of the Secretary of Defense (OSD)—specifically, the Assistant Secretary of Defense for Energy, Installations, and Environment; the four military services; and the 10 defense agencies that contributed to the report.<sup>1</sup> We also compared information in the fiscal year 2013 Energy Report to that in the fiscal year 2014 Energy Report, which was published in May 2015, to evaluate if the structure and content of each report was similar. Further, we compared OSD's process for annually updating its Energy Report to criteria regarding updating internal control activities in *Standards for Internal Control for the Federal Government*.<sup>2</sup>

To determine the extent to which DOD reliably reported energy data in its Energy Report, we reviewed the energy data and other inputs each military service and defense agency provided to be included in the Energy Report. We looked for any anomalies in the data, such as missing data

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<sup>1</sup>The fiscal year 2013 Energy Report included the facility energy activities of the four military services—Army, Navy, Air Force, and Marine Corps—and the following Defense Agencies: Defense Contract Management Agency, Defense Commissary Agency, Defense Finance and Accounting Service, Defense Intelligence Agency, Defense Logistics Agency, Missile Defense Agency, National Geospatial-Intelligence Agency, National Reconnaissance Office, National Security Agency, and Washington Headquarters Services.

<sup>2</sup>GAO, *Standards for Internal Control in the Federal Government*, GAO/AIMD-00-21.3.1 (Washington D.C.: November 1999).

fields or numerical outliers. To examine if the data and other inputs were correctly reflected, we then compared the data and other inputs from each military service and defense agency to the published Energy Report, using as criteria GAO's *Standards for Internal Control in the Federal Government* and DOD's *Annual Energy Management Report Fiscal Year 2013 Reporting Guidance*.<sup>3</sup> We also interviewed the officials who contributed to the report from OSD, the four military services, and the 10 defense agencies regarding how the data was collected, measures taken to assure the reliability of the data, and any anomalies observed in the data.

In addition, we sent a structured questionnaire to knowledgeable officials from the four military services and 10 defense agencies to collect information about how facilities within each military service and defense agency reported energy consumption, energy projects, and September 2013 end-of-fiscal-year energy consumption data included in the Energy Report. We received responses from all of the military services and defense agencies. Additionally, as part of the questionnaire, we asked the military services and defense agencies to provide data from a nongeneralizable sample of installations regarding September 2013 energy consumption reported in the Energy Report and actual energy consumption used, as verified via utility bill or meter reading. To determine our sample, we collected a random sample of 10 installations each from the Army, Navy, Air Force, and Defense Commissary Agency; 5 installations from the Marine Corps; and all installations from the remaining defense agencies in our scope. To minimize errors that might occur from respondents interpreting our questions differently than we intended, we pre-tested the questionnaire with knowledgeable representatives from one military service (Army) and one defense agency (National Reconnaissance Office). During these pre-tests, we discussed the questions and instructions with the officials to check whether (1) the questions and instructions were clear and unambiguous, (2) the terms used were accurate, (3) the questionnaire was unbiased, and (4) the questionnaire did not place an undue burden on the officials completing it. We also submitted the questionnaire for review by an independent GAO survey specialist. We modified the questionnaire based on feedback from the pre-tests and reviews, as appropriate.

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<sup>3</sup> GAO/AIMD-00-21.3.1; DOD, *Annual Energy Management Report Fiscal Year 2013 Reporting Guidance* (July 2013).

To determine the extent that the military services helped ensure energy security at energy-remote military installations in the United States, we first determined the scope of energy-remote military installations by evaluating electrical interconnectedness and robustness. First, to review interconnectedness, we conducted preliminary research on the U.S. electric power system. We determined that Alaska and Hawaii have limited interconnectedness because they are not connected to the three power grids in the 48 contiguous states, which are interconnected to each other. Moreover, the electrical systems in Alaska and Hawaii are not connected to each other. Second, once we identified these states, we attempted to further narrow the scope by determining which areas in Alaska and Hawaii are less “electrically robust” (smaller number of power plants and transmission lines in the area surrounding the installation or no connectivity to transmission lines—e.g., an installation that uses diesel generators for primary power) and therefore more energy-remote. Using mapping software, we created maps of Alaska and Hawaii using layers of data (transmission lines, power plant data, and military installations location data). Additionally, we sent a questionnaire to each installation in Alaska and Hawaii to gather preliminary information, including the presence and location of the designated facility energy manager or another official who is tasked with performing the duties of the facility energy manager, the source(s) of electricity consumed on site, the amount of electricity consumed on site during fiscal year 2014, the supplier of this electricity, the existence (if any) of an energy security plan focused on utility resilience in case of an electrical disruption, whether an energy security assessment has been conducted, and whether there are plans to develop an energy security plan or conduct an energy security assessment in the future. Based on our assessment, all 26 installations in Alaska and 35 installations in Hawaii were included in our scope. Table 2 lists the locations we visited or contacted to meet with facility energy managers and the number of associated installations they oversaw.

**Table 2: Locations Visited or Contacted and Number of Associated Installations**

| <b>Locations visited or contacted</b>          | <b>Number of associated installations</b> |
|--|---|
| <b>Alaska</b>                                  | <b>26</b>                                 |
| Clear Air Force Station                        | 1   |
| Eielson Air Force Base                         | 5   |
| Joint Base Elmendorf-Richardson                | 17 <sup>a</sup>                           |
| Fort Greely                                    | 1   |
| Fort Wainwright                                | 1   |
| Southeast Alaska Acoustic Measurement Facility | 1   |
| <b>Hawaii</b>                                  | <b>35</b>                                 |
| Joint Base Pearl Harbor Hickam                 | 16 <sup>b</sup>                           |
| Marine Corps Base Hawaii                       | 6   |
| U.S. Army Garrison Hawaii                      | 13  |

Source: GAO | GAO-16-164

Notes: We visited or contacted the facility energy manager(s) at each location and discussed with them the associated installations they oversaw.

<sup>a</sup>We met with both the facility energy managers for Joint Base Elmendorf-Richardson and Alaska Radar System during our visit to the installation. Alaska Radar System has 20 installations, but 4 locations are outside of Alaska.

<sup>b</sup>We met with the facility energy managers for Joint Base Pearl Harbor Hickam, Barking Sands Communications Station, Bellows Air Force Station, and Kaena Point Satellite Tracking Station during our visit to the installation. Joint Base Pearl Harbor Hickam has 13 associated installations.

Additionally, we interviewed the facility energy managers responsible for all of the installations in Alaska and Hawaii to identify the procedures, equipment, and plans in place to ensure energy security on site, as well as any planned future energy security assessments. We compared their actions to relevant DOD and military service regulations and guidance on their roles and responsibilities regarding energy security, including DOD's Energy Report, DOD installation energy guidance, and military service energy security guidance. We also interviewed military service officials to discuss their efforts and potential progress regarding helping to ensure energy security at energy-remote military installations.

We conducted this performance audit from March 2015 to January 2016 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

# Appendix II: GAO Assessment of the Extent to Which the Annual Energy Management Report Addressed the Required Reporting Elements

| Required reporting elements and GAO comments   | Our assessment      |
|--|---------------------|
| <p><b>1. A description of the progress made to achieve the goals of the Energy Policy Act of 2005 (Pub. L. No. 109-58), section 2911(e) of Title 10 of the United States Code, section 553 of the National Energy Conservation Policy Act (codified in relevant part at 42 U.S.C. § 8259b), the Energy Independence and Security Act of 2007 (Pub. L. No. 110-140), and the energy performance goals for the Department of Defense during the preceding fiscal year.</b></p> <p>The report described the progress made to achieve three of five goals during fiscal year 2013. Specifically, the report described progress made to achieve the goals of the Energy Policy Act of 2005, section 2911(e) of Title 10 of the United States Code, and DOD's Energy Performance Master Plan.</p> <p>For section 553 of the National Energy Conservation Policy Act, the report did not describe how DOD procured Energy Star or Federal Energy Management Program-designated products. According to the department, this requirement was addressed in past Energy Reports. DOD now includes it instead in DOD's Strategic Sustainability Performance Plan. OSD officials stated this requirement more appropriately aligns to sustainability goals, and the department coordinates its Energy Report with the Strategic Sustainability Performance Plan to reduce redundant reports and requirements. However, this required reporting element was not included in DOD's Energy Report and DOD did not identify that the information could be found elsewhere.</p> <p>For the Energy Independence and Security Act of 2007, the report did not describe one of the three required goals. The report described DOD's progress to reduce facility energy by 24 percent relative to a fiscal year 2003 baseline. It also described DOD's progress to reduce petroleum consumption in non-tactical vehicles relative to a fiscal year 2005 baseline. However, it did not describe DOD's progress to increase alternative fuel consumption by 10 percent in non-tactical vehicles relative to a fiscal year 2005 baseline. Although the report discusses alternative fuel use in non-tactical fleet vehicles, the status toward the goal is not described. According to the department, DOD includes a sentence on its status toward the goal in its Strategic Sustainability Performance Plan. However, this required reporting element was not included in DOD's Energy Report and DOD did not identify that the information could be found elsewhere.</p> | Partially addressed |
| <p><b>2. A table detailing funding, by account, for all energy projects funded through appropriations.</b></p> <p>The report includes a table that identifies funding for appropriated energy projects. However, the table does not detail the funding by account. According to OSD officials, the report considered energy conservation, renewable energy, or water conservation as accounts for reporting purposes. However, this explanation differed from the instructions provided to the military services and defense agencies, in which funding accounts were defined as operation and maintenance, working capital funds, and military construction, among others. In contrast, the instructions defined energy conservation, renewable energy, or water conservation as project type. Moreover, in DOD's Financial Management Regulation, the term "accounts" is generally used to refer to an appropriation (department code, fiscal year, and appropriation symbol)—i.e., appropriation accounts such as Operation and Maintenance, Army; the Defense Working Capital Fund; or Military Construction, Air Force<sup>a</sup></p>  | Partially addressed |

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**Appendix II: GAO Assessment of the Extent to  
Which the Annual Energy Management Report  
Addressed the Required Reporting Elements**

| <b>Required reporting elements and GAO comments</b>   | <b>Our assessment</b> |
|---|-----------------------|
| <b>3. A table listing all energy projects financed through third party financing mechanisms (including energy savings performance contracts, enhanced use leases, utility energy service contracts, utility privatization agreements, and other contractual mechanisms), the duration of each such mechanism, an estimate of the financial obligation incurred through the duration of each such mechanism, whether the project incorporates energy security into its design, and the estimated payback period for each such mechanism.</b><br><p>The report includes a table that identifies non-governmental third-party-funded energy projects, which identifies projects as either energy savings performance contracts or utility energy service contracts. However, this table does not include the duration of each such mechanism, an estimate of the financial obligation incurred through the duration of each such mechanism, whether the project incorporates energy security into its design, and the estimated payback period for each such mechanism. OSD officials stated that some of this information was not included in the public report due to public release concerns, but that the information exists in a supplemental workbook that has been previously provided to Congress upon request. However, the officials did not identify public release concerns in the Energy Report to clarify why it did not include required elements.</p>  | Partially addressed   |
| <b>4. In addition to the information contained in the table listing energy projects financed through third party financing mechanisms, as required by paragraph (3), the table also shall list any renewable energy certificates associated with each project, including information regarding whether the renewable energy certificates were bundled or unbundled, the purchasing authority for the renewable energy certificates, and the price of the associated renewable energy certificates.<sup>b</sup></b><br><p>The report did not include a table listing renewable energy certificates associated with each project financed through third-party financing mechanisms. The report did not address unbundled renewable energy certificates. The report did state that, in fiscal year 2013, the department did not have any new bundled renewable energy certificates. However, our analysis found at least three renewable energy projects that had associated renewable energy certificates. For example, a 2.06 megawatt solar photovoltaic system at the U.S. Army Garrison in Adelphi, Maryland is expected to retain approximately 2,500 renewable energy certificates annually.</p> <p>We found that these renewable energy certificates were not identified because DOD did not require the military services and defense agencies to report on renewable energy certificates associated with two types of third-party financing mechanisms: utility energy service contracts and energy savings performance contracts. According to OSD officials, they did not require information on renewable energy certificates associated with these two contracts because they only comprise approximately 5 percent of all renewable energy projects. From the officials' perspectives, the reporting requirement should focus on projects greater than 1 megawatt. However, as currently written, this required reporting element does not indicate a threshold amount for reporting renewable energy certificates, and some projects exceeding 1 megawatt were not reported.</p> | Not addressed         |
| <b>5. A description of the actions taken to implement the energy performance master plan in effect under section 2911 of Title 10 of the United States Code and carry out this chapter during the preceding fiscal year.</b><br><p>The report identifies the three goals of DOD's energy performance master plan and performance towards meeting those goals.</p>   | Fully addressed       |
| <b>6. A description of the energy savings realized from such actions.</b><br><p>The report identifies DOD's energy savings in relation to the target goals for energy efficiency, renewable energy, and petroleum consumption.</p>  | Fully addressed       |

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**Appendix II: GAO Assessment of the Extent to  
Which the Annual Energy Management Report  
Addressed the Required Reporting Elements**

| <b>Required reporting elements and GAO comments</b>   | <b>Our assessment</b> |
|---|-----------------------|
| <b>7. An estimate of the types and quantities of energy consumed by the Department of Defense and members of the armed forces and civilian personnel residing or working on military installations during the preceding fiscal year, including a breakdown of energy consumption by user groups and types of energy, energy costs, and the quantities of renewable energy produced or procured by the Department.</b><br><p>The report estimates the types and quantities of energy consumed, including narrative and charts outlining energy consumption by user groups, energy consumption by type, energy costs, and quantities of renewable energy produced or procured.</p>  | Fully addressed       |
| <b>8. A description of the types and amount of financial incentives received under section 2913 of Title 10 of the United States Code during the preceding fiscal year and the appropriation account or accounts to which the incentives were credited.</b><br><p>The report does not describe financial incentives. Title 10 U.S.C. §2913(c) states that “the Secretary of Defense may authorize any military installation to accept any financial incentive, goods, or services generally available from a gas or electric utility, to adopt technologies and practices that the Secretary determines are in the interests of the United States and consistent with the energy performance goals for the Department of Defense.”</p> <p>According to the department, section 2913 is used as the authority for DOD to enter into certain third-party-financed energy conservation projects with servicing utility companies. OSD officials stated that the financial benefit received from these arrangements is the avoidance of appropriated capital needed for project implementation. They added that utility companies provide the capital and DOD pays back the capital investment over time using the savings realized from the implemented energy conservation projects. The OSD officials further stated that the report includes information on third-party-financed utility energy service contracts. However, the report did not describe the types and amounts of financial incentives received, if any, as indicated in the required reporting element.</p> | Not addressed         |
| <b>9. A description and estimate of the progress made by the military departments to meet the certification requirements for sustainable green-building standards in construction and major renovations as required by section 433 of the Energy Independence and Security Act of 2007 (Pub. L. No 110-140).</b><br><p>The report states that the Department of Energy has not published the final regulation for implementing Section 433, adding that DOD will start reporting on this requirement after the Department of Energy issues the final rule. As of the time of this report, the Department of Energy had finalized regulations implementing certain parts of the rule, but other parts are still pending.</p>   | Fully addressed       |
| <b>10. A description of steps taken to determine best practices for measuring energy consumption in Department of Defense facilities and installations, in order to use the data for better energy management.</b><br><p>The report describes how the department measures energy consumption.</p>   | Fully addressed       |
| <b>11. Details of utility outages at military installations including the total number and locations of outages, the financial impact of the outage, and measures taken to mitigate outages in the future at the affected location and across the Department of Defense.</b><br><p>The report identifies the approximate number, approximate cost, and general locations of utility outages at installations. However, as we found in July 2015, DOD’s collection and reporting of utility disruption data is not comprehensive and contains inaccuracies, because not all types and instances of utility disruptions have been reported and there are inaccuracies in reporting of disruptions’ duration and cost.<sup>c</sup></p>   | Partially addressed   |
| <b>12. A description of any other issues and strategies the Secretary determines relevant to a comprehensive and renewable energy policy.</b><br><p>The department stated that there were no other relevant issues determined for reporting purposes.</p>   | Fully addressed       |

Source: GAO analysis of DOD’s Annual Energy Management Report. | GAO-16-164

Notes: The National Defense Authorization Act for Fiscal Year 2016, Pub. L. No. 114-92 (2015), changed several of the required reporting elements. In particular, the fourth requirement on

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**Appendix II: GAO Assessment of the Extent to  
Which the Annual Energy Management Report  
Addressed the Required Reporting Elements**

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renewable energy certificates and the seventh requirement on estimating the types and quantities of energy consumed were removed. The ninth requirement on sustainable green-building standards was revised to require a description of progress toward meeting certain standards under the Unified Facilities Criteria. The eleventh requirement on utility outages was revised to require details of non-commercial utility outages and DOD-owned infrastructure. Additionally, a new requirement was added for the inclusion of a classified annex, as appropriate.

<sup>a</sup>See, for example, definitions of chargeable account and funding account in the DOD Financial Management Regulation 7000.14, *Glossary* (April 2015).

<sup>b</sup>In the United States, renewable energy production essentially creates two products: the energy itself and an associated commodity, called a renewable energy certificate, which represents a certain amount of energy generated using a renewable resource. Renewable energy certificates are bought and sold in a fashion similar to stocks and bonds.

<sup>c</sup>GAO, *Defense Infrastructure: Improvements in DOD Reporting and Cybersecurity Implementation Needed to Enhance Utility Resilience Planning*, GAO-15-749 (Washington, D.C.: July 23, 2015).

# Appendix III: Comments from the Department of Defense



OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE  
3400 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3400

JAN 13 2016

Mr. Brian J. Lepore  
Director, Defense Capabilities and Management  
U.S. Government Accountability Office  
441 G Street, N.W.  
Washington, DC 20548

Dear Mr. Lepore:

Enclosed is the Department of Defense response to the GAO Draft Report, GAO-16-164, "DEFENSE INFRASTRUCTURE: Facilities' Energy Reporting and Energy Security Funding at Installations with Limited Connectivity Need Improvement," dated December 2, 2015 (GAO Code 352021).

Sincerely,

Peter Potoskey  
Deputy Assistant Secretary of Defense (Basing)  
Performing the Duties of Assistant Secretary of Defense  
(Energy, Installations and Environment)

Enclosure:  
As stated

**GOVERNMENT ACCOUNTABILITY OFFICE (GAO)  
DRAFT REPORT DATED DECEMBER 2, 2015  
GAO-16-164 (352021)**

**“DEFENSE INFRASTRUCTURE: FACILITIES’ ENERGY REPORTING AND ENERGY SECURITY FUNDING AT INSTALLATIONS WITH LIMITED CONNECTIVITY NEED IMPROVEMENT”**

**DEPARTMENT OF DEFENSE COMMENTS  
TO THE GAO RECOMMENDATIONS**

**RECOMMENDATION 1:** To better provide Congress with information needed to conduct oversight and make decisions on programs and funding, GAO recommends that the Secretary of Defense direct the Assistant Secretary of Defense for Energy, Installations and Environment to reexamine the process for producing the Energy Report to help ensure it complies with statutory requirements, and update it as appropriate. This includes reexamining the process to include required energy goals, descriptions of energy projects funded by appropriations and third parties, details of utility outages at military installations, information on renewable energy certificates associated with energy projects financed through third-party mechanisms, and a description of the types and amount of financial incentives received.

**DOD RESPONSE:** Concur. The Office of the Assistant Secretary of Defense (Energy, Installations and Environment (OASD(EI&E)) is already taking action to ensure the next annual energy report complies with the requirements of the recently amended 10 U.S.C. 2925.

**RECOMMENDATION 2:** In order to improve the consistency of certain data submitted by the military services and defense agencies to the Office of the Secretary of Defense and reported in the Energy Report, GAO recommends that the Secretary of Defense direct the Secretaries of the Army, Navy, and Air Force, the Commandant of the Marine Corps, the heads of the Defense Agencies, and the Assistant Secretary of Defense for Energy, Installations and Environment to work together to:

- provide more consistent guidance to the installations, including clearly stating the energy reporting requirements for tenant and host facilities, energy projects, and end-of-fiscal-year data.
- identify in the Energy Report instances in which data may not be comparable among the military services and defense agencies and the reasons why.

**DOD RESPONSE:** Concur. The OASD(EI&E) will work with the Services in Fiscal Year (FY) 2016 to provide more consistent guidance to military installations, and will identify in the FY 2016 annual energy report where data may not be compatible.

**RECOMMENDATION 3:** To better provide the military services with information needed to make decisions on the prioritization of funding, GAO recommends that the Secretary of Defense direct the secretaries of the Army, Navy, and Air Force and the Commandant of the Marine Corps to clarify the processes used to compare and prioritize military construction projects for funding, including how and when to include consideration of energy security.

**DOD RESPONSE:** Concur. DoD is presently pursuing an update to the Department of Defense Instruction 4170.11, Installation Energy Management, and plans to include guidance to prioritize funding decisions consistent with this recommendation.

# Appendix IV: GAO Contacts and Staff Acknowledgments

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## GAO Contacts

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## Staff Acknowledgments

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In addition to the contacts named above, Laura Durland (Assistant Director), Jon Ludwigson (Assistant Director), Emily Biskup, Lorraine Ettaro, Emily Gerken, Terry Hanford, Alberto Leff, Amie Lesser, John Mingus, Jodie Sandel, Erik Wilkins-McKee, and Michael Willems made key contributions to this report.

# Related GAO Products

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*Defense Infrastructure: DOD Efforts Regarding Net Zero Goals.* [GAO-16-153R](#). Washington, D.C.: January 12, 2016.

*Defense Infrastructure: Improvements in DOD Reporting and Cybersecurity Implementation Needed to Enhance Utility Resilience Planning.* [GAO-15-749](#). Washington, D.C.: July 23, 2015.

*Energy Savings Performance Contracts: Additional Actions Needed to Improve Federal Oversight.* [GAO-15-432](#). Washington, D.C.: June 17, 2015.

*High-Risk Series: An Update.* [GAO-15-290](#). Washington, D.C.: February 11, 2015.

*Climate Change Adaptation: DOD Can Improve Infrastructure Planning and Processes to Better Account for Potential Impacts.* [GAO-14-446](#). Washington, D.C.: May 30, 2014.

*Clear Air Force Station: Air Force Reviewed Costs and Benefits of Several Options before Deciding to Close the Power Plant.* [GAO-14-550](#). Washington, D.C.: May 12, 2014.

*Climate Change: Energy Infrastructure Risks and Adaptation Efforts.* [GAO-14-74](#). Washington, D.C.: January 31, 2014.

*Renewable Energy Project Financing: Improved Guidance and Information Sharing Needed for DOD Project-Level Officials.* [GAO-12-401](#). Washington, D.C.: April 4, 2012.

*Renewable Energy: Federal Agencies Implement Hundreds of Initiatives.* [GAO-12-260](#). Washington, D.C.: February 27, 2012.

*Defense Infrastructure: DOD Did Not Fully Address the Supplemental Reporting Requirements in Its Energy Management Report.* [GAO-12-336R](#). Washington, D.C.: January 31, 2012.

*Electricity Grid Modernization: Progress Being Made on Cybersecurity Guidelines, but Key Challenges Remain to be Addressed.* [GAO-11-117](#). Washington, D.C.: January 12, 2011.

*Defense Infrastructure: Department of Defense's Energy Supplemental Report.* [GAO-10-988R](#). Washington, D.C.: September 29, 2010.

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*Defense Infrastructure: Department of Defense Renewable Energy Initiatives.* [GAO-10-681R](#). Washington, D.C.: April 26, 2010.

*Defense Infrastructure: DOD Needs to Take Actions to Address Challenges in Meeting Federal Renewable Energy Goals.* [GAO-10-104](#). Washington, D.C.: December 18, 2009.

*Defense Critical Infrastructure: Actions Needed to Improve the Identification and Management of Electrical Power Risks and Vulnerabilities to DOD Critical Assets.* [GAO-10-147](#). Washington, D.C.: October 23, 2009.

*Energy Savings: Performance Contracts Offer Benefits, but Vigilance Is Needed to Protect Government Interests.* [GAO-05-340](#). Washington, D.C.: June 22, 2005.

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